

Preloaded Piezo Actuators

Compact Actuators for High Loads and Forces



P-840

- Outstanding lifetime due to PICMA® piezo actuators
- Travel range to 90 µm
- Compact housing
- Push force capacity to 1000 N
- Pull force capacity to 50 N
- µs response time
- Subnanometer resolution
- Versions with spherical tip

Application fields

- Static and dynamic precision positioning
- Fiber positioning
- Laser tuning
- Nanotechnology

Outstanding lifetime thanks to PICMA® piezo actuators

The PICMA® piezo actuators are all-ceramic insulated. This protects them against humidity and failure resulting from an increase in leakage current. PICMA® actuators offer an up to ten times longer lifetime than conventional polymer-insulated actuators. 100 billion cycles without a single failure are proven.

Motion	Unit	Tolerance	P-840.10	P-840.1B	P-840.20	P-840.2B	P-840.30	P-840.3B	P-840.40	P-840.4B
Active axes			Z	Z	Z	Z	Z	Z	Z	Z
Travel range in Z, open loop, at 0 to 100 V	µm	±20%	15	15	30	30	45	45	60	60

Positioning	Unit	Tolerance	P-840.10	P-840.1B	P-840.20	P-840.2B	P-840.30	P-840.3B	P-840.40	P-840.4B
Resolution in Z, open loop	nm	Typ.	0.15	0.15	0.3	0.3	0.45	0.45	0.6	0.6

Drive Properties	Unit	Tolerance	P-840.10	P-840.1B	P-840.20	P-840.2B	P-840.30	P-840.3B	P-840.40	P-840.4B
Drive type			Piezo actuator/PICMA®	Piezo actuator/PICMA®	Piezo actuator/PICMA®	Piezo actuator/PICMA®	Piezo actuator/PICMA®	Piezo actuator/PICMA®	Piezo actuator/PICMA®	Piezo actuator/PICMA®
Electrical capacitance in Z	µF	±20%	1.5	1.5	3	3	4.5	4.5	6	6

Mechanical Properties	Unit	Tolerance	P-840.10	P-840.1B	P-840.20	P-840.2B	P-840.30	P-840.3B	P-840.40	P-840.4B
Stiffness in Z	N/μm	±20%	57	57	27	27	19	19	15	15
Resonant frequency in Z, unloaded	kHz	±20%	18	18	14	14	10	10	8.5	8.5
Permissible push force in Z	N	Max.	1000	1000	1000	1000	1000	1000	1000	1000
Permissible pull force in Z	N	Max.	50	50	50	50	50	50	50	50
Permissible torque in θZ	N·m	Max.	0.35		0.35		0.35		0.35	
Mass without cable	g	±5%	20	20	28	28	46	46	54	54
Material			Housing / tip: Stainless steel	Housing / tip: Stainless steel	Housing / tip: Stainless steel	Housing / tip: Stainless steel	Housing / tip: Stainless steel	Housing / tip: Stainless steel	Housing / tip: Stainless steel	Housing / tip: Stainless steel
Length	mm	±0,3 mm	32	32	50	50	68	68	86	86
Mechanical interface				Spherical tip		Spherical tip		Spherical tip		Spherical tip

Miscellaneous	Unit		P-840.10	P-840.1B	P-840.20	P-840.2B	P-840.30	P-840.3B	P-840.40	P-840.4B
Operating temperature range	°C		-20 to 80	-20 to 80	-20 to 80	-20 to 80	-20 to 80	-20 to 80	-20 to 80	-20 to 80
Connector			LEMO FFA. 00.250	LEMO FFA. 00.250	LEMO FFA. 00.250	LEMO FFA. 00.250	LEMO FFA. 00.250	LEMO FFA. 00.250	LEMO FFA. 00.250	LEMO FFA. 00.250
Cable length	m		1	1	1	1	1	1	1	1
Recommended controllers / drivers			E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-665, E-709, E-831	E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-665, E-709, E-831	E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-665, E-709, E-831	E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-665, E-709, E-831	E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-665, E-709, E-831	E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-665, E-709, E-831	E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-665, E-709, E-831	E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-665, E-709, E-831

Motion	Unit	Tolerance	P-840.60	P-840.6B
Active axes			Z	Z
Travel range in Z, open loop, at 0 to 100 V	μm	±20%	90	90

Positioning	Unit	Tolerance	P-840.60	P-840.6B
Resolution in Z, open loop	nm	Typ.	0.9	0.9

Drive Properties	Unit	Tolerance	P-840.60	P-840.6B
Drive type			Piezo actuator/PICMA®	Piezo actuator/PICMA®
Electrical capacitance in Z	μF	±20%	9	9

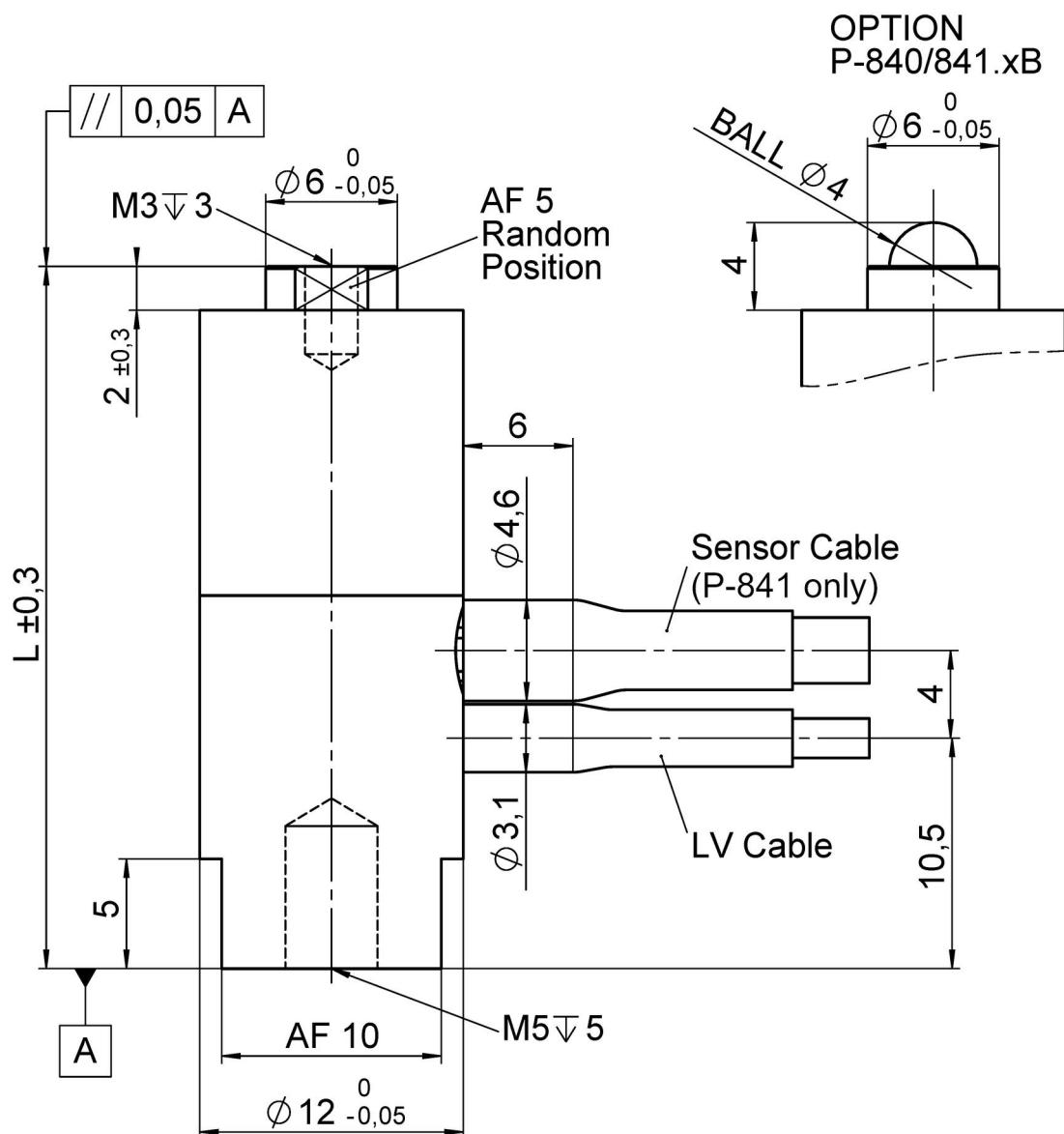
Mechanical Properties	Unit	Tolerance	P-840.60	P-840.6B
Stiffness in Z	N/μm	±20%	10	10
Resonant frequency in Z, unloaded	kHz	±20%	6	6
Permissible push force in Z	N	Max.	1000	1000
Permissible pull force in Z	N	Max.	50	50
Permissible torque in θZ	N·m	Max.	0.35	
Mass without cable	g	±5%	62	62
Material			Housing / tip: Stainless steel	Housing / tip: Stainless steel
Length	mm	±0,3 mm	122	122
Mechanical interface				Spherical tip

Miscellaneous	Unit	P-840.60	P-840.6B
Operating temperature range	°C	-20 to 80	-20 to 80
Connector		LEMO FFA.00.250	LEMO FFA.00.250
Cable length	m	1	1
Recommended controllers / drivers		E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-665, E-709, E-831	E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-665, E-709, E-831

Stiffness in Z: Static large-signal stiffness; dynamic small-signal stiffness is approx. 30 % higher.

The resolution of the system is only limited by the noise of the amplifier and measuring technology because PI piezo actuators are free of friction.

Drawings / Images



Model	Travel Range	L	Cable Length
P-840.10 / P-841.10	15 μm	32 mm	1 m
P-840.20 / P-841.20	30 μm	50 mm	1 m
P-840.30 / P-841.30	45 μm	68 mm	1 m
P-840.40 / P-841.40	60 μm	86 mm	1 m
P-840.60 / P-841.60	90 μm	122 mm	1 m

P-840 / P-841, dimensions in mm. Sensor included only with P-841.

Order Information

P-840.10

Preloaded piezo actuator; PICMA® piezo actuator drive; 15 µm travel range (open loop); 32 mm length; push force capacity 1000 N; pull force capacity 50 N; LEMO connector; 1 m cable length

P-840.1B

Preloaded piezo actuator; PICMA® piezo actuator drive; 15 µm travel range (open loop); 32 mm length; push force capacity 1000 N; pull force capacity 50 N; spherical tip; LEMO connector; 1 m cable length

P-840.20

Preloaded piezo actuator; PICMA® piezo actuator drive; 30 µm travel range (open loop); 50 mm length; push force capacity 1000 N; pull force capacity 50 N; LEMO connector; 1 m cable length

P-840.2B

Preloaded piezo actuator; PICMA® piezo actuator drive; 30 µm travel range (open loop); 50 mm length; push force capacity 1000 N; pull force capacity 50 N; spherical tip; LEMO connector; 1 m cable length

P-840.30

Preloaded piezo actuator; PICMA® piezo actuator drive; 45 µm travel range (open loop); 68 mm length; push force capacity 1000 N; pull force capacity 50 N; LEMO connector; 1 m cable length

P-840.3B

Preloaded piezo actuator; PICMA® piezo actuator drive; 45 µm travel range (open loop); 68 mm length; push force capacity 1000 N; pull force capacity 50 N; spherical tip; LEMO connector; 1 m cable length

P-840.40

Preloaded piezo actuator; PICMA® piezo actuator drive; 60 µm travel range (open loop); 86 mm length; push force capacity 1000 N; pull force capacity 50 N; LEMO connector; 1 m cable length

P-840.4B

Preloaded piezo actuator; PICMA® piezo actuator drive; 60 µm travel range (open loop); 86 mm length; push force capacity 1000 N; pull force capacity 50 N; spherical tip; LEMO connector; 1 m cable length

P-840.60

Preloaded piezo actuator; PICMA® piezo actuator drive; 90 µm travel range (open loop); 122 mm length; push force capacity 1000 N; pull force capacity 50 N; LEMO connector; 1 m cable length

P-840.6B

Preloaded piezo actuator; PICMA® piezo actuator drive; 90 µm travel range (open loop); 122 mm length; push force capacity 1000 N; pull force capacity 50 N; spherical tip; LEMO connector; 1 m cable length